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U.S. SERIAL NO.: 10/723,292  
FILED: NOVEMBER 26, 2003  
APPLICANT: INFINEON TECHNOLOGIES AG  
TITLE: VITERBI DECODER  
INVENTOR: BRÜLS**

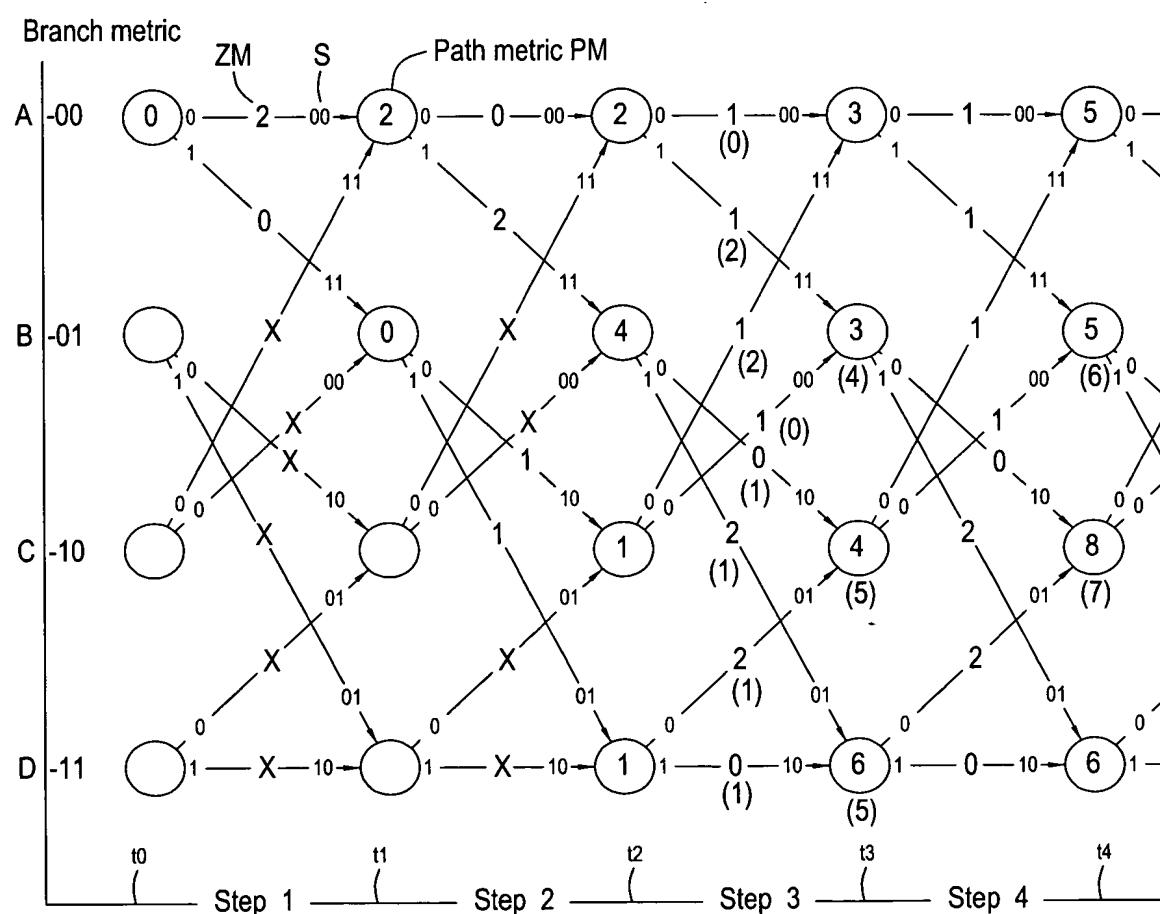
CONF. No.: 556

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Radix-2 trellis with four states, digital transmission  
 Example: Branch metric ZM=[2-Hamming distance (s,e)]

Original sequence	0	1	1	0	• • •
Transmission sequence	00	11	01	01	
Reception sequence	00	11	01	01	



Decoded sequence      0      1      1      0      ...

FIG. 1

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Radix-2 trellis with four states, analog transmission  
Example: Branch metric ZM=3- (s,e)

Original sequence	0	1	1	0	• • •
Output sequence	00	11	01	01	
Transmission sequence	0	3	1	1	
Reception sequence	0,2	2,7	1,6	1,1	

e

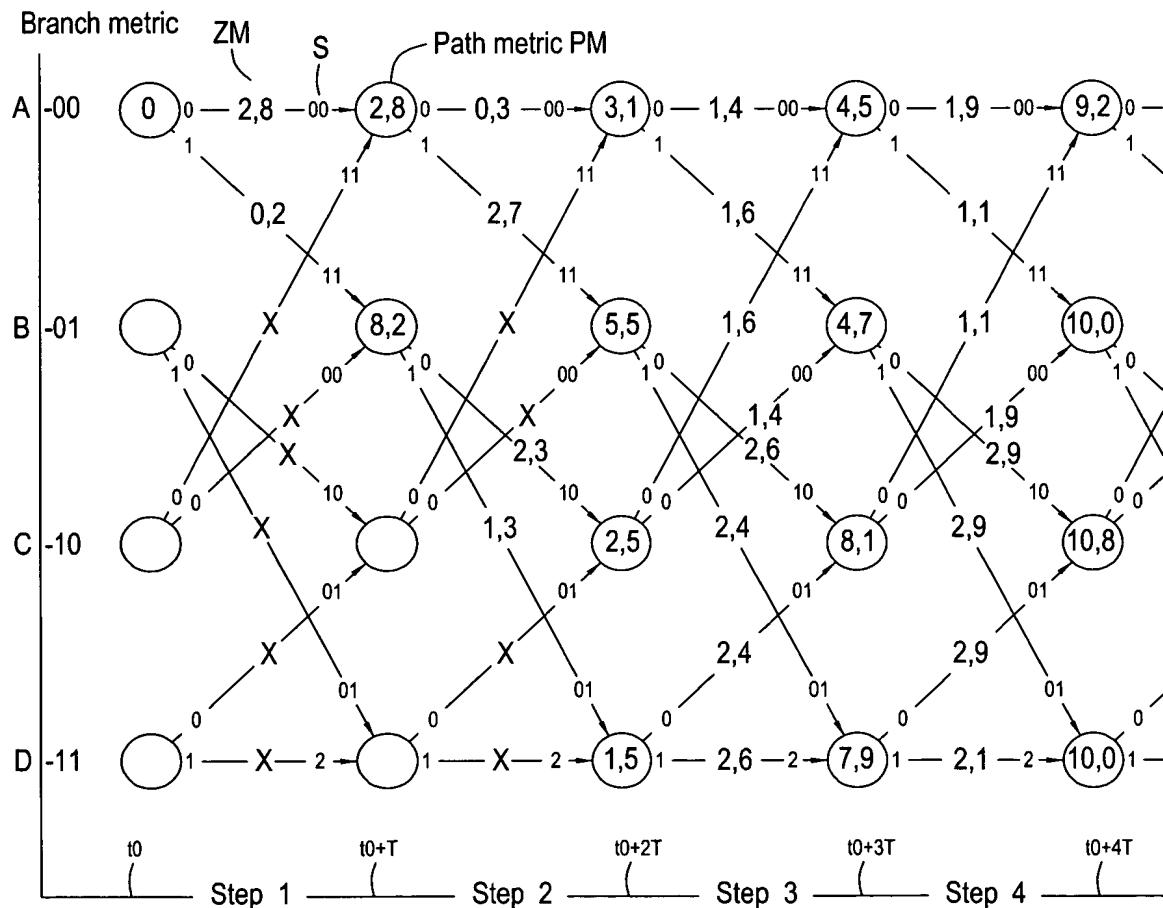


FIG. 2

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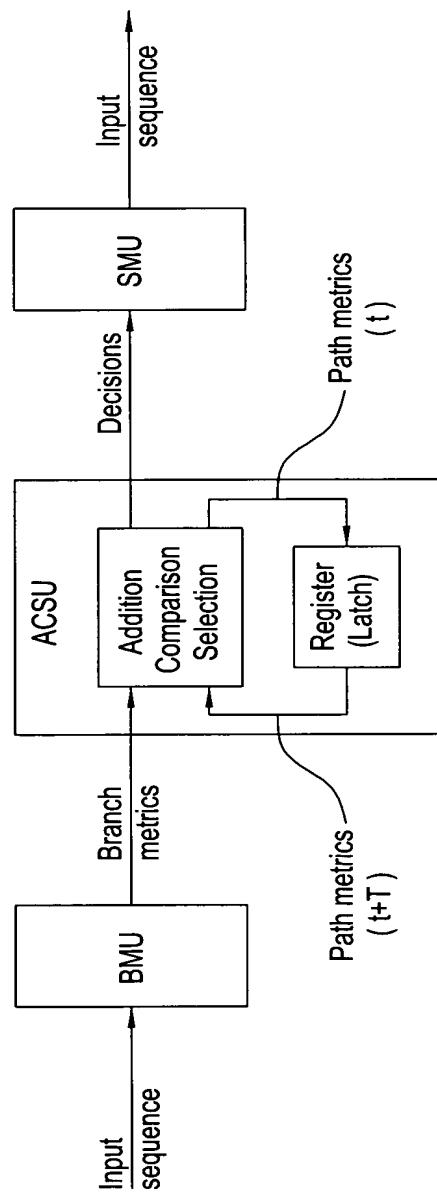


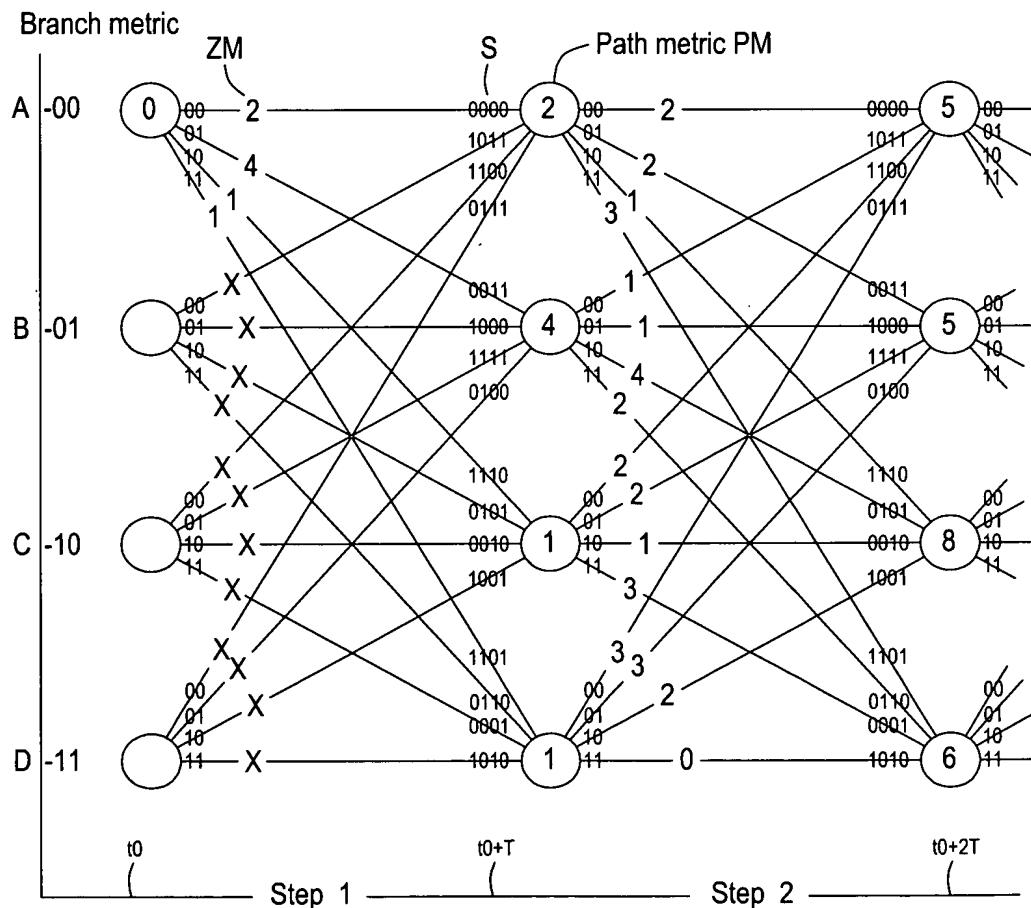
FIG. 3

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Radix-2 trellis with four states, digital transmission  
 Example: Branch metric ZM=[4-Hamming distance (s,e)]

Original sequence	0	1	1	0	• • •
Output sequence	00	11	01	01	
Reception sequence	00	11	01	01	

e



Decoded sequence	0	1	1	0	• • •
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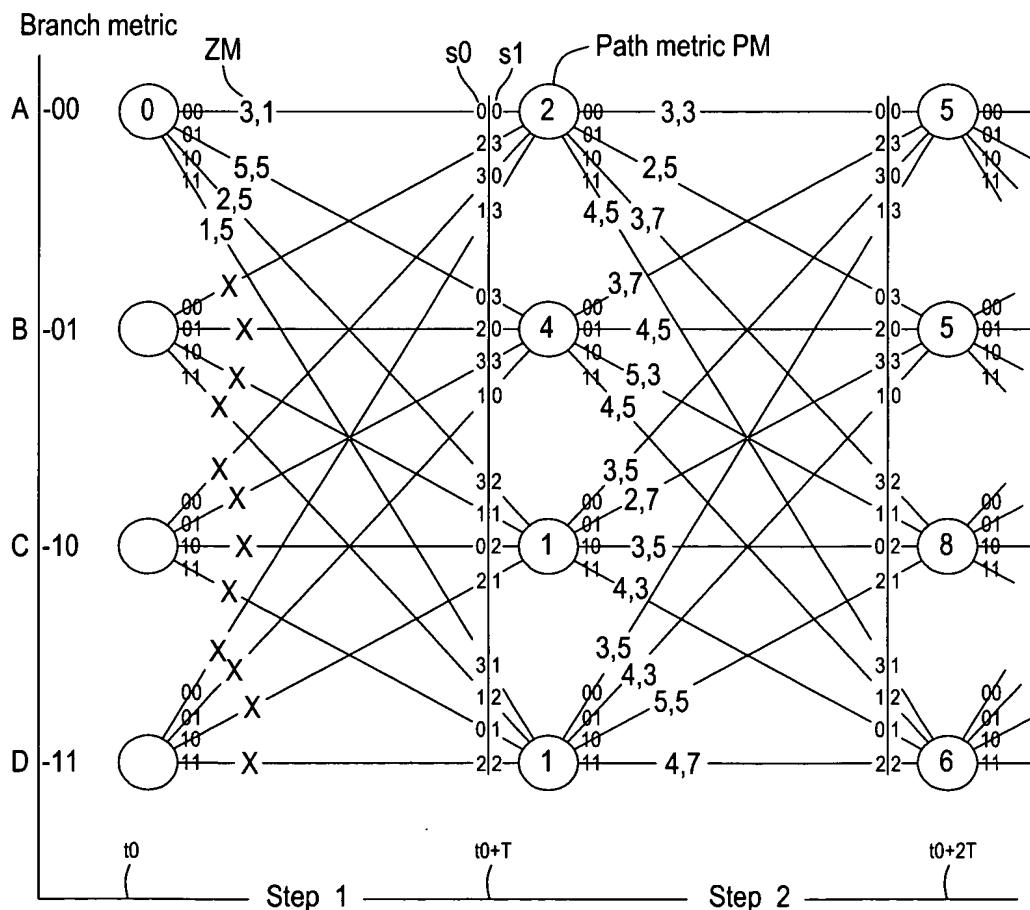
FIG. 4

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Radix-4 trellis with four states, analog transmission  
 Example: Branch metric ZM=6(|e0-s0|+|e1-s1|)

Original sequence	0	1	1	0	• • •
Output sequence	00	11	01	01	
Transmission sequence	0	3	1	1	
Reception sequence	0,2	2,7	1,6	1,1	

e0      e1      e0      e1



Decoded sequence	0	1	1	0	• • •
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FIG. 5

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Radix-4 trellis with eight states

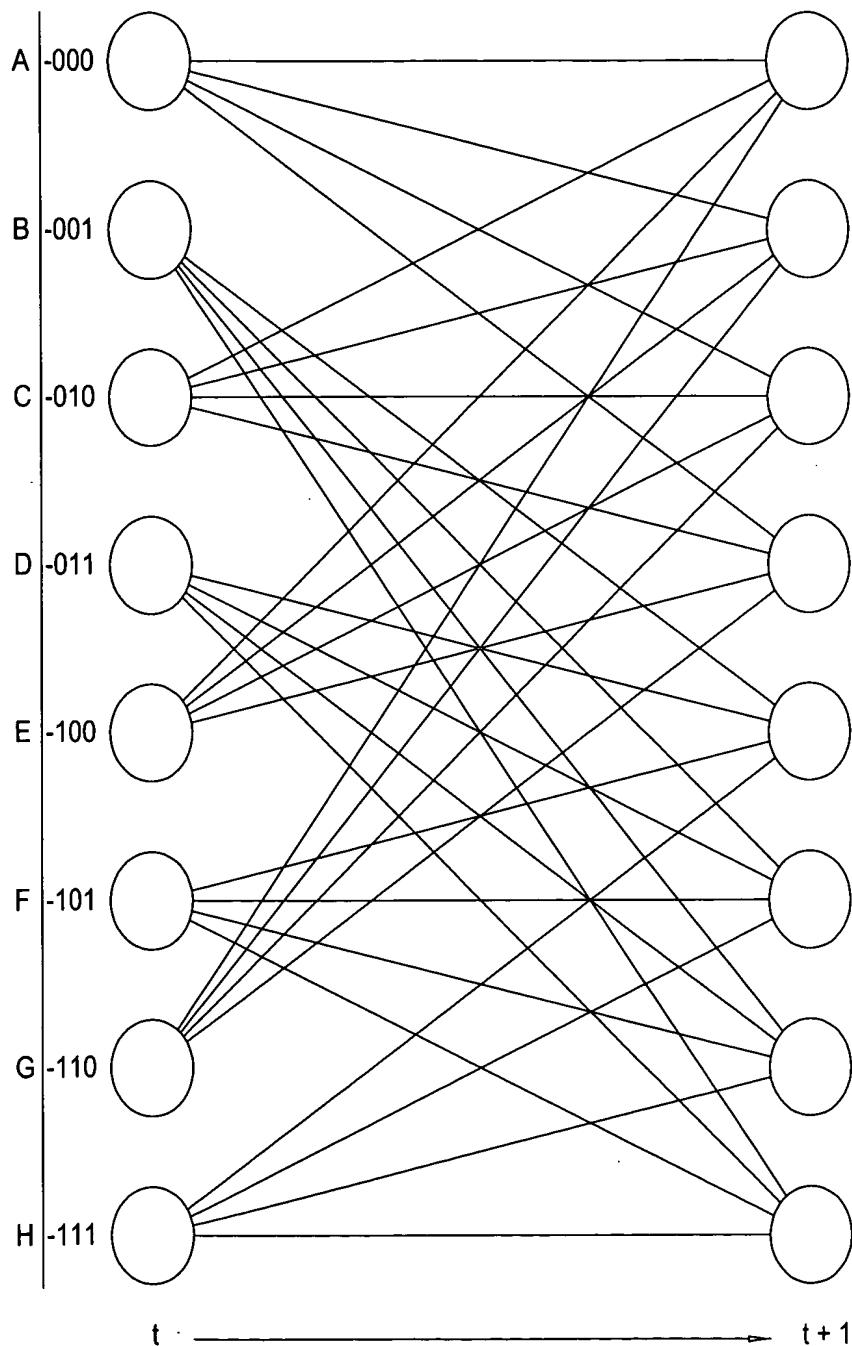


FIG. 6

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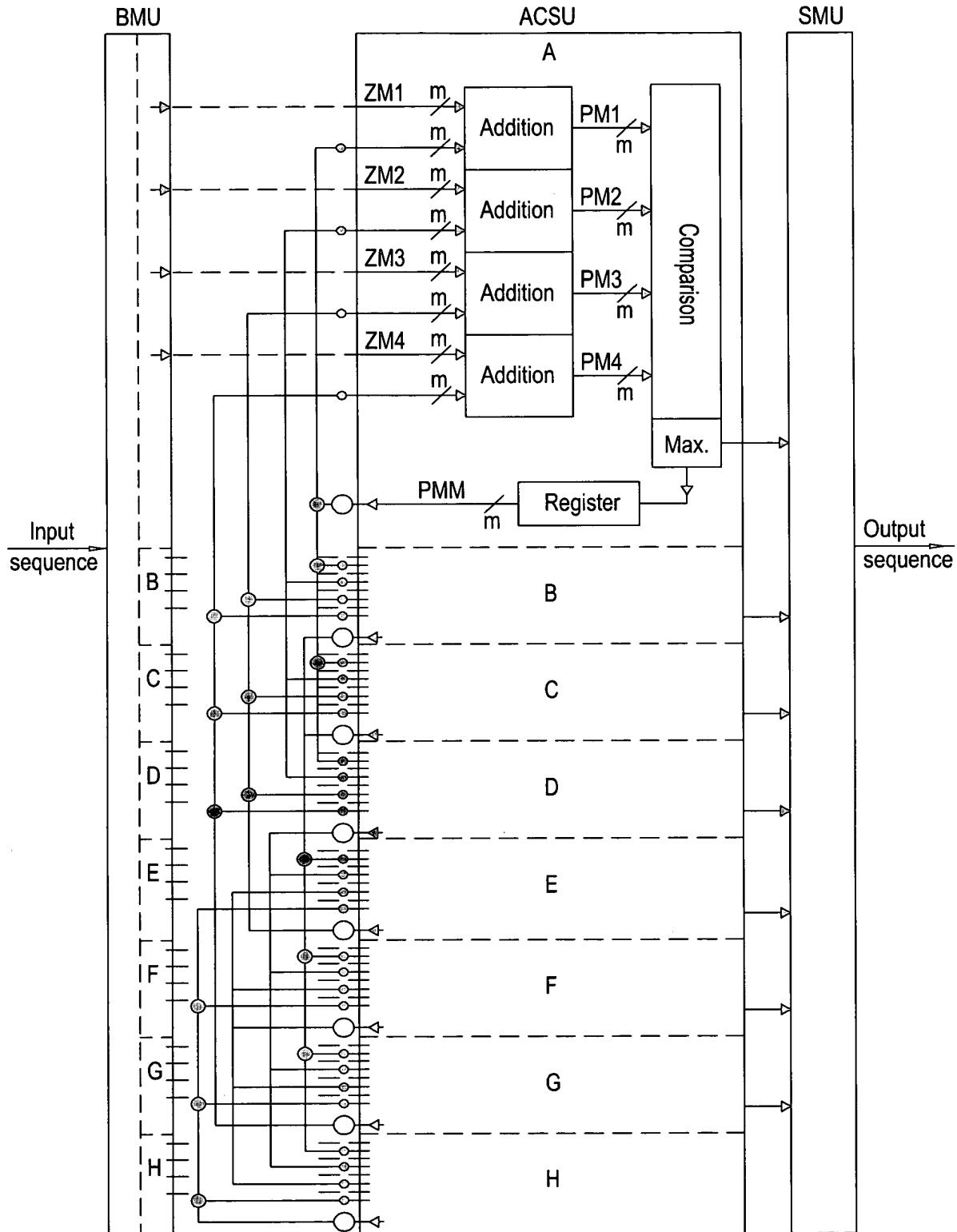


FIG. 7

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ACSU Section A from Figure 7

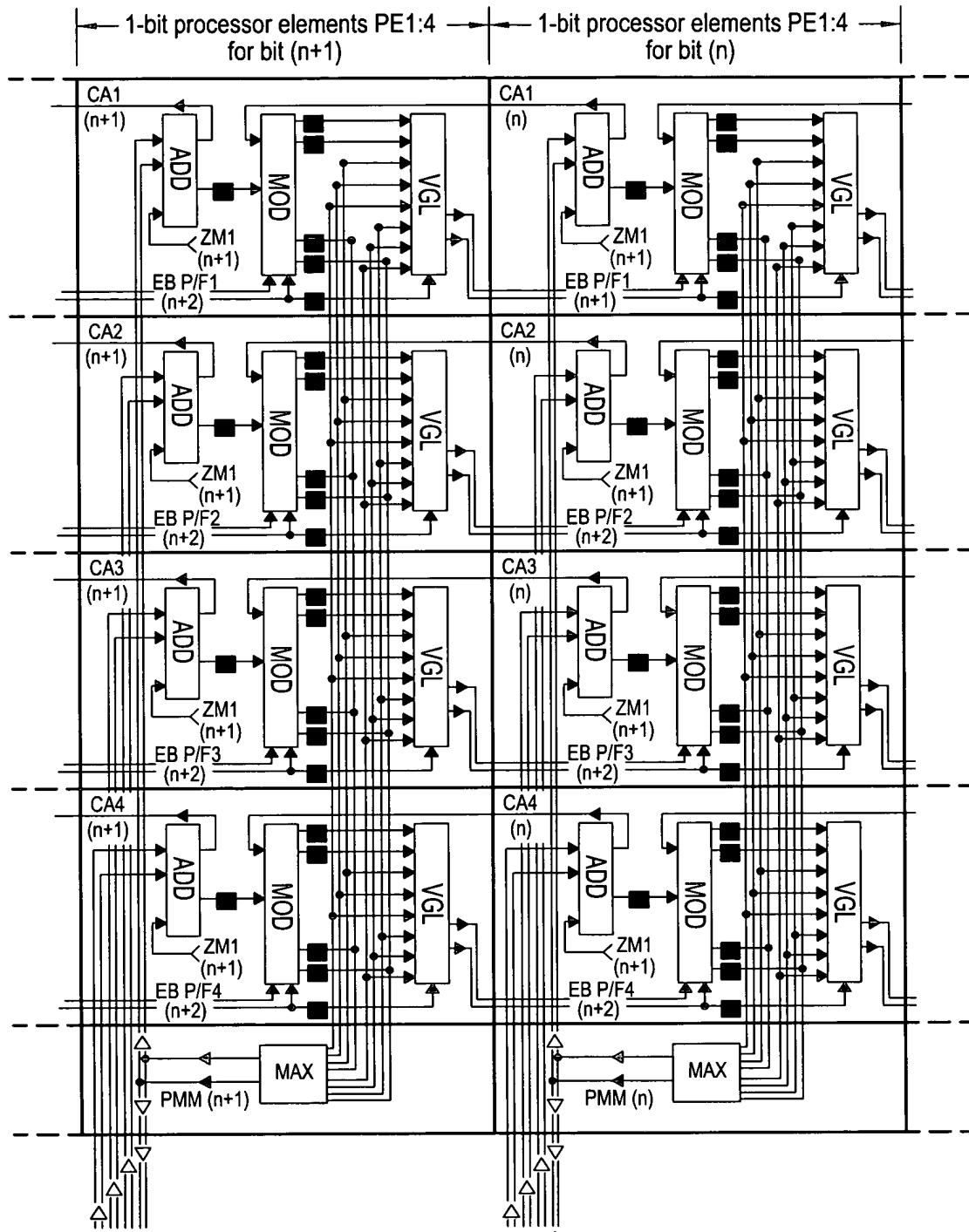


FIG. 8  
(PRIOR ART)

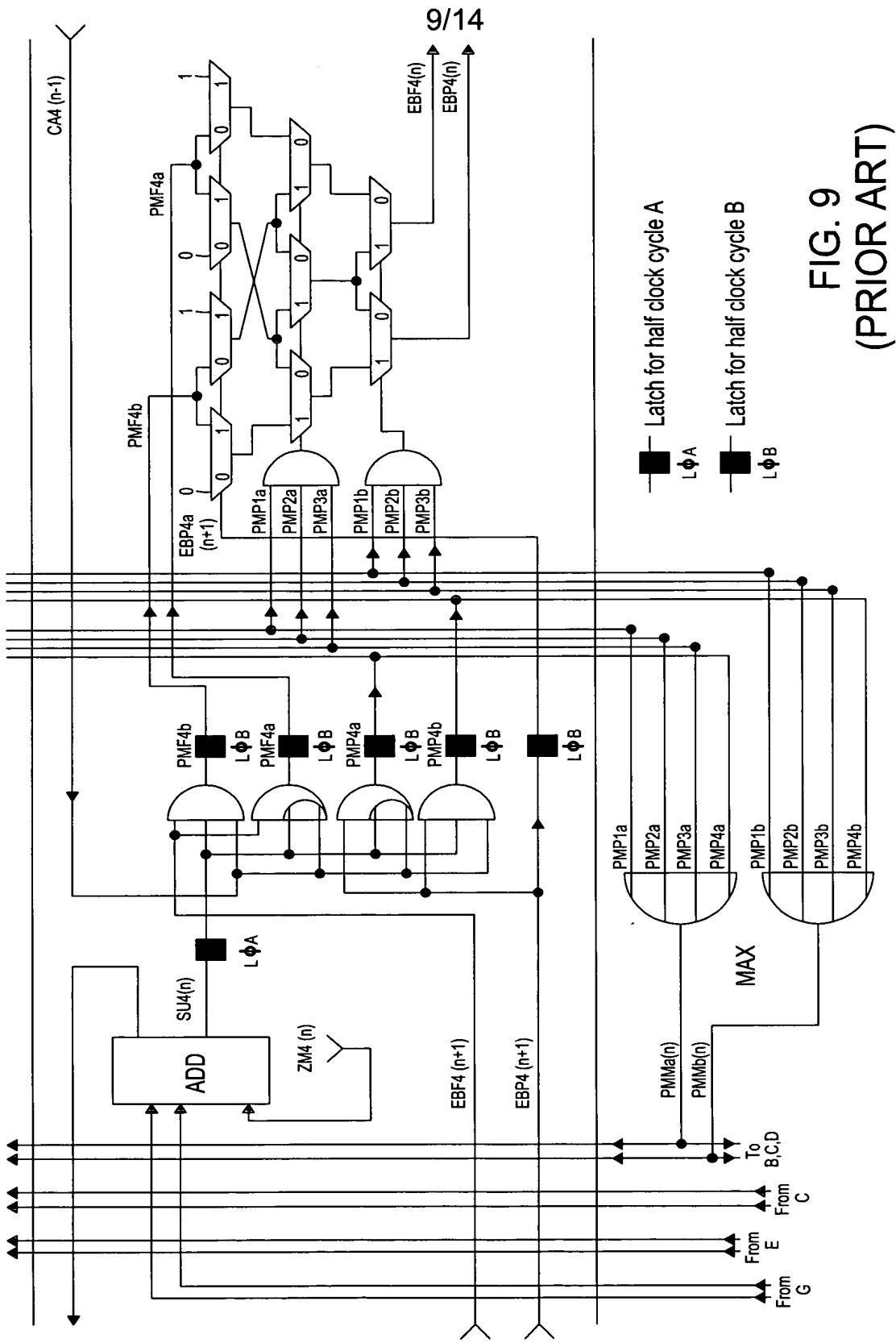


FIG. 9  
(PRIOR ART)

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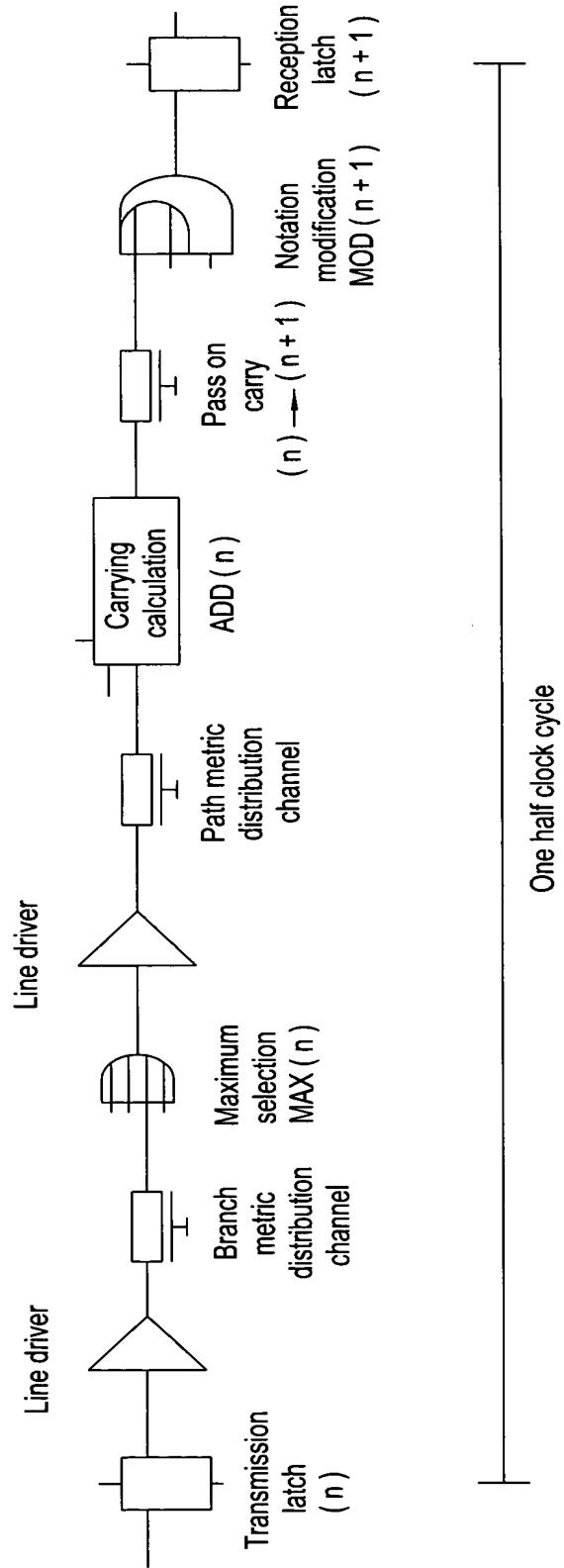


FIG. 10  
(PRIOR ART)

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ACSU Section A from Figure 7  
(specifically: Processor elements for branch metric ZM4 )

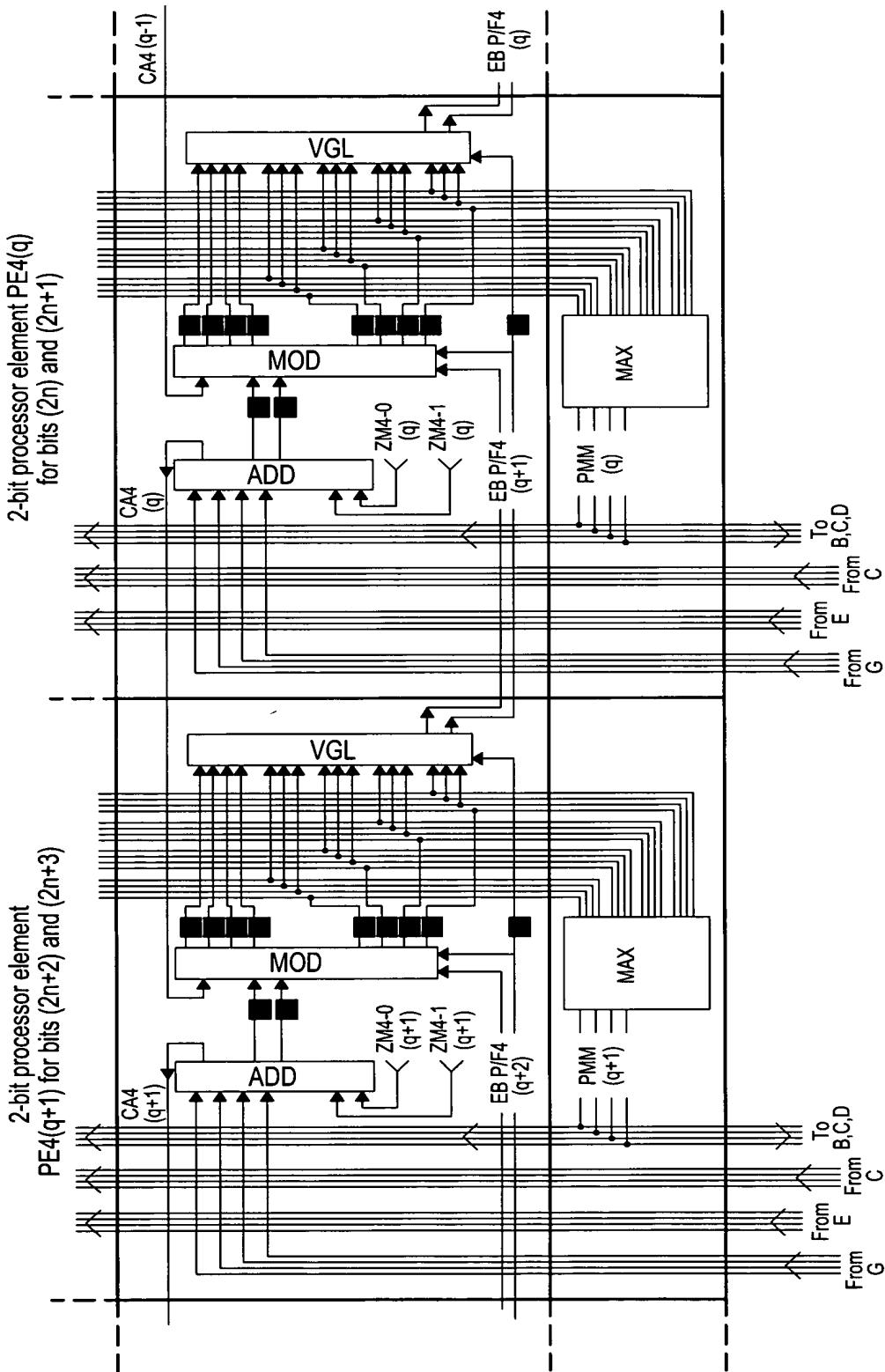
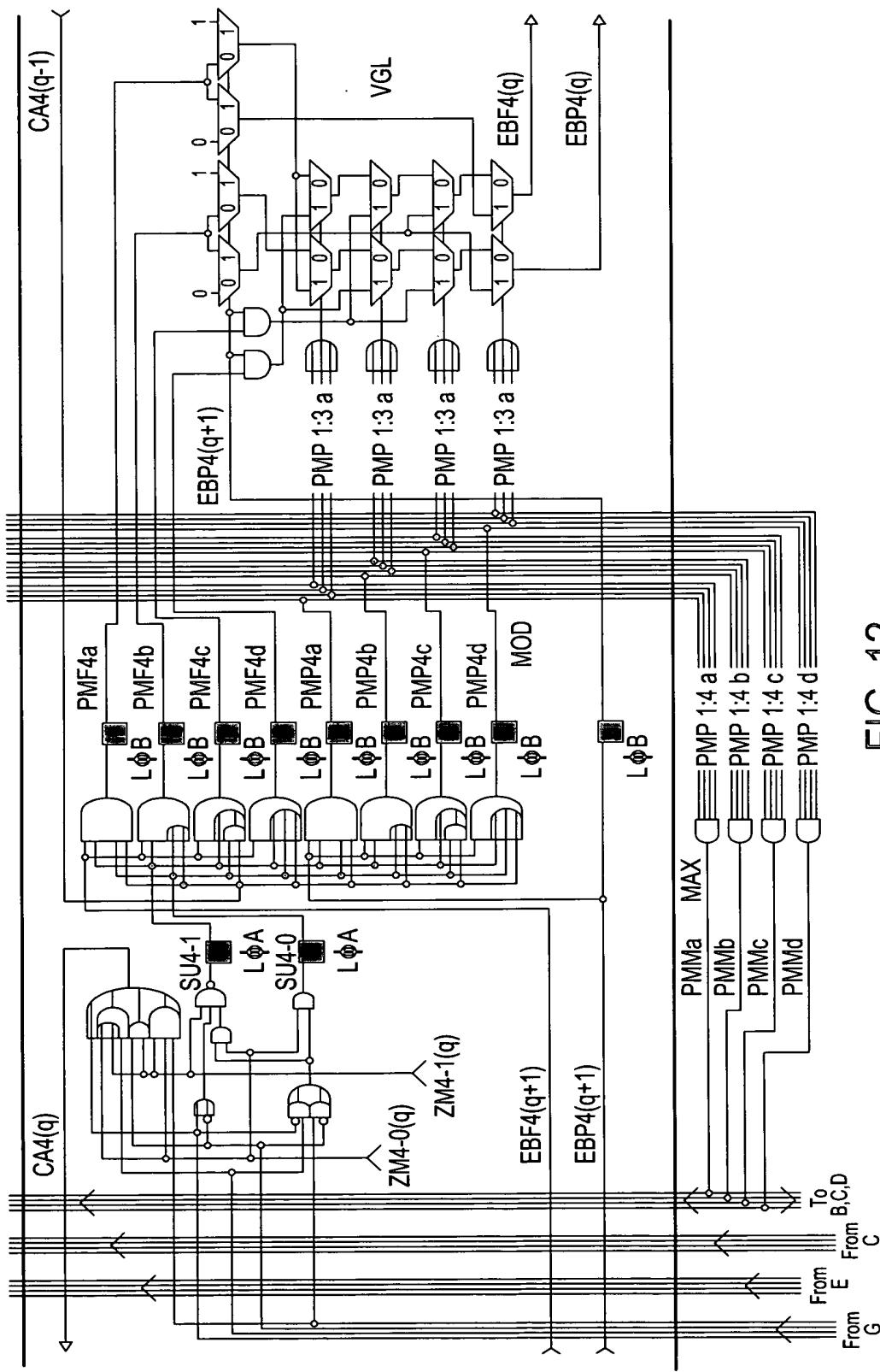


FIG. 11

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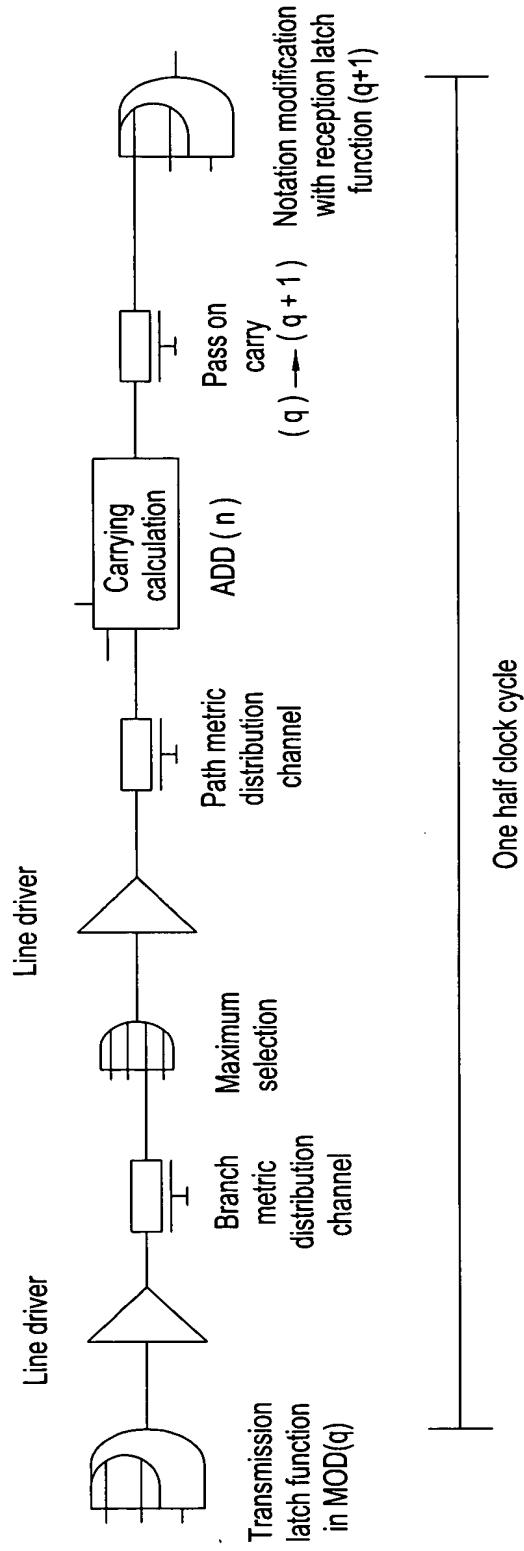


FIG. 13

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$$y = [(x_1 \cdot x_2) + x_3] \cdot x_4$$

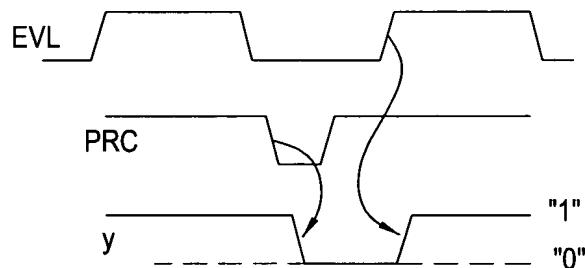
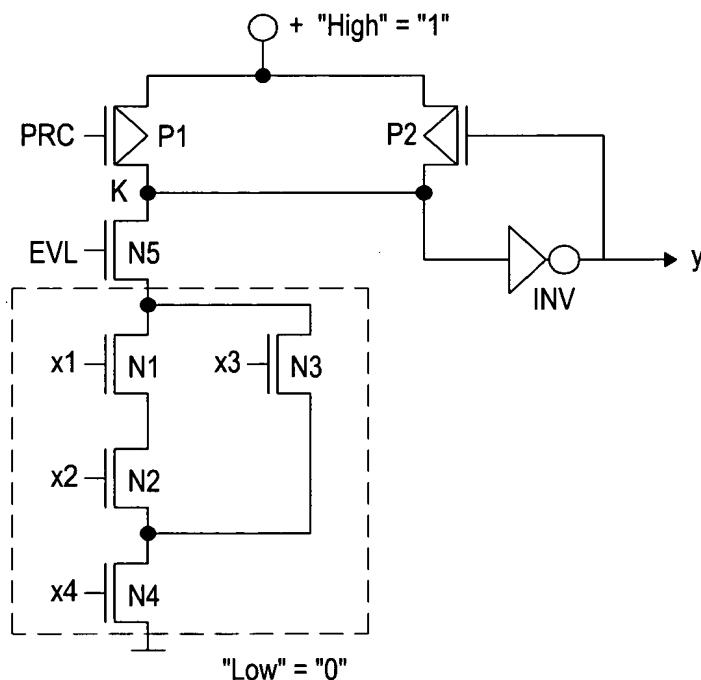
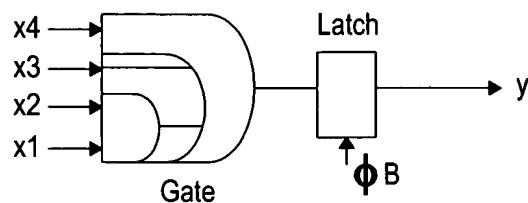


FIG. 14